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IMPLEMENTATION OF GOVERNING COUNCIL DECISION 16/13 ON THE ENVIRONMENTAL SITUATION IN THE OCCUPIED PALESTINIAN AND OTHER ARAB TERRITORIES

Report of the Executive Director

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IMPLEMENTATION OF GOVERNING COUNCIL DECISION 16/13 ON THE ENVIRONMENTAL SITUATION IN THE OCCUPIED PALESTINIAN AND OTHER ARAB TERRITORIES

Introduction

1. The present report of the Executive Director has been prepared in response to Governing Council decision 16/13 of 31 May 1991 which, *inter alia*, requested the Executive Director to take actions and measures capable of halting environmental deterioration in the occupied Palestinian and other Arab territories, to complete the database of information about the environmental situation in the occupied Palestinian and other Arab territories and to report to the Council at its seventeenth session on the progress made in the implementation of the decision.

2. The Executive Director in November 1992 informed the Governments concerned, and the Palestine Liberation Organization (PLO) in Tunis of the plans to send a technical mission to visit those countries to compile information on the availability of relevant existing data on the environmental situation in the occupied Palestinian and other Arab territories. The technical mission, comprising three UNEP staff members and a consultant, was received in February-March 1993 by the Governments of Egypt, Jordan and the Syrian Arab Republic and by the PLO in Tunis. The Government of Israel communicated to the Executive Director its suggestion "that the decision whether or when to send a mission be taken in relation to the progress of the work in the multilateral working group (in the context of multilateral negotiations of the Middle East peace process), and thus advance the regional cooperation within the framework of the multilateral track of the peace process."

3. The present report is based on information the UNEP technical mission managed to obtain from visits to the countries and on other reliable sources of information, obtained according to a structured questionnaire. The terms of reference of the mission are attached as Annex I.

I. ENVIRONMENTAL DATA FOR THE OCCUPIED TERRITORIES

4. The present section contains a summary evaluation of the availability of data in the countries and institutions visited during the mission. The evaluation is based on the questionnaires and on additional information provided by interviews. The institutions visited usually gather data from various other sources. Thus, it has not been possible to identify the original sources of the data or to assess the methods used to acquire it.

Occupied Golan Heights

Availability

- *Base data*: Base data are available covering administrative boundaries, land ownership, land use, settlements and population figures. No information is available concerning socio-economic base data, e.g., on labour force, household size, etc.;

- *Health*: Only limited information is available on the health sector, e.g., birth rates and health infrastructure;

- *Natural resources*: Tables and maps are available for climate, soils, vegetation, and fresh water; surface water and groundwater issues are well documented;

- *Human activities*: Data on human activities are available for agricultural land and production, as well as for energy use and transport infrastructure (roads).

Assessment

5. Major data gaps can be identified in the fields of environmental health, nutrition (e.g. food production and consumption) and the atmospheric environment. Time series data are very limited; those available cover only human settlements and some meteorological factors. The years to which data refer are not always clear. Many data seem to refer to the status in 1967 and before.

6. Because the occupied Golan Heights region is relatively sparsely populated (approx. 15 000) and there are no research institutions there, it is expected that most of the valuable data resources lie outside the territory.

Occupied Southern Lebanon

7. It was not possible to visit Lebanon and the occupied territories in Southern Lebanon. Only very limited relevant information about the availability of environmental data could be gathered from the other countries visited.

Gaza Strip

Availability

- *Base data*: Most base data on land and population are available;

- *Health*: Most health data are available;

- *Natural resources*: Data on natural resources are available, mainly for climate and fresh water (surface water, groundwater, water use, waste water, and water pollution), but no data are available on coastal resources and atmospheric pollution;

- *Human activities*: Data on human activities are available, mainly on agriculture and, to a more limited extent, hazardous wastes and road infrastructure.

Assessment

8. Although data on many environmental sectors are available, the scope of the few data resources which could be visited outside the Gaza Strip is very different. For example, United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) data refer mostly to the refugees inside and outside camps and relate to very local problems; while a lot of the PLO data are aggregated for the overall area. Therefore, it is very difficult to compare and assess the existing data.

9. Major data gaps can be identified in the fields of soil degradation and soil pollution, vegetation inventories, coastal pollution, atmospheric environment and industrial statistics. Most data are in tabular form and only a few maps are available.

10. During the mission, information was obtained about a number of research institutions inside the Gaza Strip which are actively gathering and assessing environmental data; those institutions might be an important resource for additional environmental data.

West Bank

Availability

- *Base data*: Thematic maps are available giving land data on administrative boundaries, settlements, land ownership, and land use. All population data are available, but the available time series only cover refugees inside and outside camps;

- *Health sector*: All health data indicated in the questionnaire are available, some in map format;

- *Natural resources*: Many relevant data on climate, soils, and fresh water are available;

- *Human activities*: Data on human activities are available covering agriculture, energy use, and transport infrastructure.

Assessment

11. A large amount of the data come from Jordanian sources and refer to the situation before 1967. Those data can be used as a "baseline" against which the actual environmental situation can be compared.

12. Major data gaps can be identified in the fields of soil degradation and soil pollution. Absolutely no data are available on atmospheric environment, such as ambient and indoor air pollution.

13. During the mission, information was obtained about a number of research institutions inside the West Bank which are actively gathering and assessing environmental data. Those institutions might be a valuable source of additional environmental data.

Synopsis

14. The data available are scattered among different institutions and exist in very different formats with different geographic references and different time-frames. Even taking into account the major data gaps, the members of the mission considered that, if the data found in the institutions visited were brought together, a preliminary assessment of the state of the environment and its changes could be carried out.

Recommendations

15. Because the mission could not visit the occupied territories nor Israel or Lebanon, the recommendations in the present report should be regarded as preliminary. Only after visiting those areas, assessing the available data in the various local organizations, and reviewing the organizational capabilities in the occupied territories could more comprehensive recommendations be made.

II. ESTABLISHMENT OF ENVIRONMENTAL INFORMATION SYSTEMS

16. Databases for environmental problems are usually integrated within environmental information systems (EIS). Such systems are specifically designed for managing heterogeneous environmental data and information from very different sources. The important components of environmental information systems are non-spatial and georeferenced databases, and satellite image-processing systems.

17. The members of the mission identified environmental data scattered among many sources and in many different formats. In order to evaluate the usefulness of such data and assess their meaning, the data must be brought together and organized through an EIS.

18. Based on the findings of the mission and on the political, geographical and environmental differences between the occupied territories, it is recommended that several EIS should be established, along the lines set out in paragraphs 19 to 21 below.

Occupied Golan Heights

19. With respect to the establishment of an EIS, the occupied Golan Heights are to be considered separately from the other occupied territories. It is recommended that an EIS for the occupied Golan Heights be established within the Syrian Arab Republic and be run by Syrian experts. There are several organizations which could house such a system, for example the General Commission for Environmental Affairs (GCEA) or the General Organization of Remote Sensing (GORS), both based in Damascus. Because of the existing advanced capabilities in those institutions, little support, if any, would be necessary for the establishment of the EIS.

Occupied Southern Lebanon

20. The mission did not visit Lebanon; but the limited information gathered about occupied Southern Lebanon suggests that the situation is similar to that in the Golan Heights. Southern Lebanon is to be considered separately from the other occupied territories and, therefore, should have an EIS housed in an appropriate Lebanese organization. At present, no recommendation on where to locate the system can be given.

Occupied West Bank and Gaza Strip

21. These two Palestinian territories are geographically separated and apparently have separate sources of environmental data. There seem to be frequent data exchanges and communications within and between the territories. Information from Palestinian sources suggests that there are a number of professionals, institutes and individuals already working in the field of environmental data collection and assessment in the West Bank as well as in the Gaza Strip.

22. It is recommended that one EIS be established for both territories. The information gathered during the mission suggests that, although some institutes in the West Bank and the Gaza Strip have started collecting and organizing environmental data, at present no specific EIS capabilities are available within the areas. The recommendations outlined in paragraphs 25 to 28 below specifically refer to options for those areas.

23. The EIS unit could be located in the West Bank, with a sub-unit in the Gaza Strip. Based on the information gathered, it appears that several existing institutions in the areas concerned might fit that profile. The proposed sub-unit in Gaza should feed information from Gaza into the West Bank EIS and support its operations. At the present time, no suggestions can be given for a possible location of the sub-unit.

24. In order to facilitate the establishment of a long-term EIS operation, it is recommended that the EIS be set up in two steps. The first step will aim to collect and organize all existing geographic and tabular data. The first stage could be expected to take between 2 to 3 years. During the second stage, the sub-unit should expand database-related operations, develop analysis and modelling capabilities, establish routine procedures for data archiving and dissemination, and participate in local, regional,

and global data networks. The second stage could be expected to have a duration of 5 to 10 years. A description of proposed activities and needs for every stage is given in Annexes II and III to the present report. An estimate of costs involved in the acquisition of hardware, software and running costs for the initial stage is given in Annex IV.

25. It is recommended that a back-up unit be established outside the occupied Palestinian territories. The purpose of that unit will be to serve as a repository for copies of all data collected and developed by the main EIS centre. In that regard, it will be necessary to define and establish procedures for obtaining copies of databases on a regular basis. No major investments are expected, since the unit will basically store media and data; its main activities will be related to data archiving and cataloguing. There could be some time-lag in the creation of the unit.

26. The level of support activities required (financial, technical, training) will depend on the current status of capabilities and activities in those institutions where the central EIS and sub-unit could be established. Proper recommendations can only be provided once the sites have been visited and a location has been chosen.

27. If needed, staff could receive basic training in database activities, satellite image processing and georeferenced information systems. Training could be differentiated according to the background and tasks to be performed by the staff, as well as local conditions. In any case, courses should address the needs of the EIS centre and the tasks to be performed. Specific training could be devised later, as activities evolve. The different venues and options available for training and funding can be explored and evaluated once the real needs have been identified.

28. It may be beneficial for the main EIS centre to establish links with the rest of the international environmental information community to make best use of the growing international cooperative efforts for easy data exchange and use.

Synopsis

- Although the mission did not visit the occupied territories, a strong body of ancillary information indicates that there are enough data to justify the establishment of an environmental information system;

- Environmental information systems are proposed for the occupied Syrian and Lebanese territories at the national level and under the authority of the national Governments;

- For the occupied Palestinian territories, it is recommended that an environmental information system be established within the territories. A main centre should be established in the West Bank and a sub-unit in the Gaza Strip. A back-up centre should be established outside the occupied territories;

- Technical, financial and training support for the institution operating the EIS can only be properly recommended once the potential sites have been visited and a location has been chosen.

Annex I

TERMS OF REFERENCE OF THE MISSION

I. PRE-MISSION

Collect and study relevant information available at UNEP and devise a proper framework for the mission.

II. PURPOSE OF THE MISSION

The purpose of the mission is:

1. To identify available environmental data and information for the occupied Palestinian and other Arab territories. The mission will:

- Compile information on the availability of existing data on human settlements, human health, natural resources, pollution, and human activities;

- Identify the sources of those data and assess the methods of data acquisition;

- Identify gaps in the available data;

- Assess existing data formats for data exchange, and the capabilities for data storage and data processing;

- Evaluate existing datasets and scales for spatial data.

2. To provide recommendations for the establishment of appropriate environmental information systems for the occupied Palestinian and other Arab territories. With the information obtained under objective 1, the mission will attempt to:

- Assess the usefulness of the establishment of environmental information systems for the areas of concern;

- Devise the necessary technical steps towards the establishment and operation of environmental information systems;

- Provide expert advice for selection of proper equipment;

- Formulate the necessary financial, technical, and training support for the operation of the environmental information systems;

- Identify potential mechanism and sources of funding for the implementation of the environmental information systems;

- Suggest options for the institutional framework and location of the environmental information systems.

Annex II

RECOMMENDATIONS FOR THE ESTABLISHMENT OF THE MAIN ENVIRONMENTAL INFORMATION SYSTEM CENTRE IN THE WEST BANK - INITIAL STAGE

The objective of the initial stage will be to collect and organize all existing spatial and tabular data. To accomplish that goal, it may be necessary to acquire equipment and train professionals in database design and implementation, basic georeferenced information system concepts and related operations for data input and output, and basic concepts of remote sensing and image processing. No major data processing (analysis and modelling) is expected during this stage.

Time frame: 2-3 years.

Staff: 3-5 Professionals (1 coordinator/manager);

1-2 Professionals (1-2 technicians).

Activities:
- Design and implementation of spatial and non-spatial databases;
- Data harmonization and input;
- Data quality control;
- Standardization of exchange formats.

Requirements:
- Data input - digitizer, terminals;
- Data output - printers, plotter.

A list of suggested hardware and software is given in Annex IV.

Annex III

RECOMMENDATIONS FOR THE ESTABLISHMENT OF THE MAIN ENVIRONMENTAL INFORMATION SYSTEM CENTRE IN THE WEST BANK - ADVANCED STAGE

The objective of the second stage will be to expand the database related operations; develop analysis and modelling capabilities and expertise; establish routine procedures for data archiving and dissemination; and establish a network. To achieve those goals it may be necessary to increase the number of staff, increase processing capabilities, and provide advanced training in database, GIS and satellite-image processing, including data archiving and database management. In the long run, the centre should also aim to develop its own training capabilities and to achieve international recognition.

Time frame: 5-10 years.

Staff: Total of 5-10 Professionals (1 manager, 1 systems analyst, 1 database administrator, 2-4 data analysts, 2-3 technicians).

Activities:
- Establish a system for data collection from contributors;
- Data harmonization and input;
- Data quality control;
- Data analysis and modelling;
- Generation of reports;

Requirements:
- Data input: digitizer, keyboards;
- Data output: printers, plotter;
- Data analysis: GIS/image processing;
- Networks (Local Area Network - LAN, and Wide Area Network - WAN).

A list of additional hardware and software is given in Annex IV.

Annex IV

COST ESTIMATE FOR AN ENVIRONMENTAL INFORMATION SYSTEM CENTRE - INITIAL STAGE

Hardware	*Approximate cost US$*
2 x 386- or 486-based PC system with diskette drives, keyboard, 4-megabyte RAM memory, 300 megabyte disk, super VGA display	10 000
A2-sized digitizing table with 16-button cursor	5 000
A3-sized colour inkjet printer	2 000
A3-sized 4-pen plotter	2 000
Text and graphics printer (not colour)	1 000
1-bytes per inch (bpi) 9-track tape drive	7 000
24-bit 1024 x 1024 display card	4 000
RGB display (14")	1 500
GIS Software (alternatives)	
Arc/Info (basic modules)	6 000
Atlas GIS	2 600
Map/Info (windows version)	1 000
Image processing software (alternatives)	
ERDAS software	15 000
Idrisi software	200
Basic software (if necessary)	
Spreadsheet, word processor, graphics	1 000

Running costs are estimated at between 15 to 20 per cent of investment per year.